

CLAIMS:

1. An ancient defense polymer having antimicrobial activity, said polymer comprising one or more discrete hydrophobic segments and one or more hydrophilic segments containing cationic functionality.
2. An ancient defense polymer according to claim 1, in which said hydrophobic segment comprises:
 - 1) polymerized hydrophobic chain growth monomers;
 - 2) polymerized step-growth monomers; or
 - 3) hydrophobic (di)functional oligomers or polymers.
3. An ancient defense polymer according to claim 1 or 2, in which said hydrophilic segment comprises:
 - 1) polymerized cationic chain growth monomers;
 - 2) a polymer made from a mixture of cationic chain growth monomers and (i) uncharged monomers that are hydrophilic or (ii) hydrophobic monomers; or
 - 3) cationic (di)functional oligomers or polymers .
4. The ancient defense polymer of claim 1, 2, or 3, wherein said hydrophobic segment comprises polymerized hydrophobic alkyl methacrylates, aryl methacrylates, alkyl methacrylamides, or aryl methacrylamides.
5. The ancient defense polymer of any one of claims 1 to 4, wherein said hydrophilic segment comprises polymerized methacrylates and/or methacrylamides.
6. The ancient defense polymer according to claim 1 comprising a copolymer of 3-aminopropyl methacrylamide (AMA_x) and poly(propylene oxide)monomethacrylate (PPO-ME).

7. The ancient defense polymer according to claim 6 wherein AMA is present in an amount of from 5 to 50 mol%.

5 8. The ancient defense polymer according to claim 6, wherein AMA is present in an amount of about 10 mol%.

9. The ancient defense polymer according to claim 1, comprising a terpolymer of 3-aminopropyl methacrylamide (AMA), poly(propylene oxide)monomethacrylate (PPO-ME),
10 and methyl methacrylate.

10. The ancient defense polymer according to claim 1, comprising a terpolymer of 3-aminopropyl methacrylamide (AMA), poly(propylene oxide)monomethacrylate (PPO-ME), and n-butyl methacrylate.

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11. The ancient defense polymer according to any one of claims 1 to 10, that has a grafted chain architecture, comprising a main chain and chains grafted onto the main chain.

12. The ancient defense polymer of claim 11, wherein the main chain contains hydrophilic
20 segments and the grafts contain the hydrophobic segments.

13. The ancient defense polymer of any one of claims 1 to 10, wherein the hydrophilic and/or the hydrophobic segments are attached either directly or indirectly to a derivatizable polymer.

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14. The ancient defense polymer according to claim 13, wherein at least one of said hydrophobic segments or said hydrophilic segments is attached to the derivatizable polymer by a spacer group.

15. The ancient defense polymer according to claim 13, wherein said hydrophobic segment and said hydrophilic segment are attached to the derivatizable polymer by a spacer group.

5 16. The ancient defense polymer according to claim 13, wherein at least one of said hydrophobic segments and said hydrophilic segments is grafted onto said derivatizable polymer.

10 17. The ancient defense polymer according to claim 13, wherein said hydrophobic segment is grafted onto said hydrophilic segment.

18. The ancient defense polymer of any one of claims 13 to 16, wherein the derivatizable polymer comprises polymerized chain growth monomers containing reactive functional groups.

15 19. The ancient defense polymer of claim 18, wherein said functional groups are one or more of the groups selected hydroxyl, carboxylic acid, amine, vinyl, acid chloride , and isocyanate.

20 20. An apparatus comprising the ancient defense polymer of any one of claims 1 to 19 bound in or attached to a surface of said apparatus to impart antimicrobial activity to said apparatus.

25 21. The apparatus of claim 20, wherein said apparatus is selected from the group consisting of an implant, a catheter, a replacement valve, a wound dressing, a medical device, and a stent.

22. The ancient defense polymer of claim 10, made from 1-15 mol% BMA, 5-49 mol% AMA, and 50-90 mol% PPO-Me.

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